LAND RECLAMATION COMMISSION

STATE OF MISSOURI
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
573-751-4041

Permit To Engage in Surface Mining

LAND RECLAMATION COMMISSION

ISSUES TO
KNOX COUNTY STONE COMPANY

Pursuant to "The Land Reclamation Act," RSMo, 2001, and on conformity with the statements In the application, a permit is hereby granted to engage in surface mining of limestone in the state of Missouri. The extent of the Proposed mining operation(s) will be on 51 acres, more or less.

The locations of the operation(s) under this permit is/are as follows: Renewal

County	Section	Township	Range	Acres Renewed	Acres New	Total Acres	Site/Stream Name	Site Number
Knox	25	62N	12W	51	0	51	Knox County Stone	0046

This permit may be suspended or revoked upon violation of any or all of the conditions set forth in "The Land Reclamation Act," RSMo. 2001, or in such rules and regulations as are promulgated pursuant thereto by the Land Reclamation Commission.

IN WITNESS WHEREOF I have hereunto set my hand this 13th day of August 2004

Tom Cabanne for Larry Gen
DIRECTOR OF STAFF
Land Reclamation Commission

Permit No. 0038
Effective Date 09/01/2004
Expiration Date 08/31/2005

MO 780-1122 (6-95)

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MISSOURI LAND RECLAMATION COMMISSION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

PERMIT RENEWAL FOR INDUSTRIAL MINERAL MINES

NAME OF CORPORATION, COMPANY, PARTNERSHIP OR INDIVIDUAL			DATE
Knox County Stone			07/08/04
ADDRESS	CITY	STATE	ZIP
1701 5th Avenue	Moline	Illinois	61265
CONTACT PERSON		TELEPHONE NUMBER	
Gerard Gregg		309.757.0522	

FEES: COMPLETE SECTION I OR SECTION II

SECTION I. Fees: Open pit operators and those mining more than 5,000 tons of sand and/or gravel:

1. To compute the site fee complete the information below:

SITE NAME OR NUMBER (add a separate sheet for additional sites)	Mark each month that the site will be operated during the permit year.	For sites operated less than six months per permit year pay $150 For sites operated six months or more per permit year pay $300
1. **Edina Quarry KC01**	~~Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec~~	$ 300.00
2.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
3.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
4.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
5.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
6.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
7.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
8.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
9.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
10.	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	$
TOTAL SITE FEE →		$ 300.00

2. Acreage Fee $5 X 51 number of acres bonded ..... $ 255.00

3. Annual Permit Fee..... $ 500

4. Total Fee (Add totals from 1, 2, and 3) ..... $ 1055.00
NOTE: If Total Fee exceeds $2500.00 then pay only ..... $ 2,500

SECTION II. FEES: Sand or gravel operators mining less than 5,000 tons per year:

3. Annual Permit Fee..... $ 300

SIGNATURE OF APPLICANT	TITLE	DATE
Gerard J Gregg	MGR ENV. SERVICES	7/8/04

Appeared before me this _____ day of _____, 20 _____, _____
to me personally known, who executed the above as their free acts and deeds.

NOTARY PUBLIC EMBOSSER SEAL	STATE OF Illinois	
	SUBSCRIBED AND SWORN BEFORE ME, THIS 8th DAY OF July YEAR 2004	USE RUBBER STAMP IN CLEAR AREA BELOW
	NOTARY PUBLIC SIGNATURE: Rexann M. Garmoe	MY COMISSION EXPIRES: 11-9-07
	NOTARY PUBLIC NAME (TYPED OR PRINTED): Rexann M. Garmoe	OFFICIAL SEAL REXANN M. GARMOE NOTARY PUBLIC - STATE OF ILLINOIS MY COMMISSION EXPIRES 11-9-07

FOR DEPARTMENT USE ONLY: APPROVED BY	DATE APPROVED	PERMIT NUMBER	EXPIRATION DATE
[signature]	8-13-04	0038	8-31-05

MISSOURI DEPARTMENT NATURAL RESOURCES
LAND RECLAMATION COMMISSION

SITE INFORMATION FORM

To be completed for each separate area of disturbance associated with mining operations.

SITE NAME OR NUMBER	PERMIT NUMBER
KNOX COUNTY STONE - KS01	38

COMPANY NAME: KNOX COUNTY STONE COMPANY

COUNTY	1/4 SECTION	SECTION
KNOX	NE 4	25

TOWNSHIP	RANGE	ACRES
T62	R12	WHOLE PROP - 449 QUARRY AREA - 160

RIVER OR STREAM NAME (FOR IN-STREAM ACRES): —

MINERAL COMMODITY	ESTIMATED TONS/YEAR (FOR GRAVEL SITES)
LIMESTONE	

NAME OF LANDOWNER (ATTACH LIST IF MORE THAN ONE): CENTRAL STONE COMPANY

ADDRESS: RR#1 BOX 236 HANNIBAL

CITY	STATE	ZIP CODE
HANNIBAL	MO.	63401

SOURCE OF RIGHT TO MINE (CHECK ONE):

- ☐ MINERAL DEED
- ☒ WARRANTY DEED
- ☐ OTHER (DESCRIBE): _____
- ☑ LEASE
- ☐ VERBAL AGREEMENT

DATE OF AGREEMENT:

MINERAL RIGHTS OWNER (ATTACH LIST IF MORE THAN ONE): SAME

ADDRESS:

CITY	STATE	ZIP CODE

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JUN 06 1993
MISSOURI LAND RECLAMATION COMMISSION

SOURCE OF RIGHT TO MINE (CHECK ONE):

- ☐ MINERAL DEED
- ☑ WARRANTY DEED
- ☐ OTHER (DESCRIBE): _____
- ☒ LEASE
- ☐ VERBAL AGREEMENT

DATE OF AGREEMENT:

NOTE: Each site must be shown on a map and be included in a public notice and an approved mine plan.

MO 780-1036 (12-91)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
MINE PLAN (UPDATE)

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P.O. BOX 176
JEFFERSON CITY, MO 65102

TYPE OF PLAN (CHECK ONE):
☐ SHORT TERM, FOR ONE PERMIT YEAR
☒ LONG TERM, FOR PERIOD THROUGH DATE: 8-31-2020

COMPANY NAME KNOX COUNTY STONE COMPANY

DESCRIPTION OF SITE PRIOR TO LAND RECLAMATION COMMISSION PERMITTING (BY APPLICANT OR PRIOR OPERATOR), INCLUDING SOIL, VEGETATION AND TOPOGRAPHY.

The west half of the area is gently rolling crop/pasture ground. Rock Creek meanders across the bottom ½ of the property. The area south of the creek is also gently rolling farm ground and with timber along the edges of the creek. The northeastern quarter of the property (where the quarry is located) is flat row cropped farm ground. Soil consists, in the flat area, of the Piopolis-Blackoar-Arbela systems, deep and poorly drained bottom lands. The higher elevations consist of the Armstrong-Leonard systems soils.

OPERATION PLAN - 10 CSR 40-10.020(2)(D)1.

A. TOPSOIL

AVERAGE DEPTH OF TOPSOIL, PRIOR TO LAND RECLAMATION COMMISSION PERMITTING	IS TOPSOIL TO BE SOLD OR DISCARDED OFFSITE?
12" topsoil and 8' of usable subsoil ~~INCHES~~	☐ YES OR ☒ NO

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL REMOVAL

The topsoil will be removed using either dozers and scrapers or a dozer will push the top soil over the quarry face and the material will be loaded into a truck and hauled to a different location and stockpiled.

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL STORAGE AND PROTECTION

We are very luck to have a large quantity of topsoil an subsoil that we can use adjacent to our quarry area. Most all of the remaining spoil will be placed in the quarry area. As this spoil is expanded into the quarry, the topsoil will not be saved for several years. When we can see reserves coming to an end, topsoil and subsoil will then be saved, put into a pile, graded, seeded, and mulched for protection. It will be placed in storage areas by trucks or scrapers and graded by dozers.

PERMIT NO._____ SITE NO.+/or NAME_____

B. SPOIL

DESCRIBE METHODS AND LOCATION OF SPOIL PLACEMENT AND DISPOSAL

The quarry is now large enough that most spoil will be placed in a section of the quarry that has all reserves removed. This pile will be expanded as the quarry expands. The outside slope will be left at an angle of repose because of the lack of room. The final slope will be graded to be 3:1. If any spoil is placed outside the pit, it will be immediately graded to a rolling topography with 3:1 outside slopes.

C. ACID MATERIALS

DESCRIBE METHODS AND EQUIPMENT USED FOR HANDLING ACID MATERIALS (IF NONE IS ANTICIPATED, WRITE "NONE" BELOW)

There ar no acid materials.

D. PIT INFORMATION (GIVE ALL DIMENSIONS IN FEET)

DESCRIBE LOCATION AND ORIENTATION OF PIT, IF NOT CLEAR ON SITE MAPS

See Map

YES	NO	
☐	☒	Will any excavation be at or within fifty feet (50') of the right-of-way of any public road?
☐	☒	Will any highwall consisting of unconsolidated materials be left within fifty feet of the right-of-way of any public road? (NOTE: For unconsolidated materials left in place, a slope of no more than forty degrees may start near the right of way, and in no case may the excavation be closer to the right of way than fifty feet or twenty-five feet plus one and one-half (1-½) times the depth of unconsolidated material, whichever is greater, unless a variance is granted by the Commission.)
☐	☒	Will any excavation start at or within fifty feet (50') of any property line? (NOTE: If the answer is "yes", a safety barrier may be needed.)

PERMIT NO._____ SITE NO.+/or NAME_____

RECLAMATION PLAN - 10 CSR 40-10.020(2)(D)2.

A. REVEGETATION (Attach additional sheets, if needed)

REVEGETATION MIX #1	PURPOSE OR LAND USE	B. SEEDING OR PLANTING TIME
5-3 Pasture Mix	Wildlife / Pasture	Fall / Spring

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

Broadcast Seeding

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE
5-3 Pasture Mix See Chart	30 lbs.	---	---

REVEGETATION MIX #2	PURPOSE OR LAND USE	B. SEEDING OR PLANTING TIME

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE

ATTACH ADDITIONAL SHEETS FOR ADDITIONAL SEED MIXES.

PERMIT NO._____ SITE NO.+/or NAME_____

B. GRADING

DESCRIBE PROPOSED RECLAIMED TOPOGRAPHY, INCLUDING SLOPES

Spoil place in pit will have a fairly flat top and 3:1 outside slopes. Pit will fill with water and cover most of spoil. There might be 25% of the slopes steeper than 3:1 because it will re reclaimed as wildlife area.

Any spoil placed outside pit will be gently rolling with all outside slopes graded to 3:1 and reclaimed as pasture/wildlife areas.

C. DESCRIBE THE GENERAL SEQUENCE AND TIMING OF THE FOLLOWING ACTIVITIES

GRADING

After all spoil is placed in the pit from the remaining reserves, the outside slopes will be graded to a 3:1 slope with the likely hood that 25% of the area will be left steeper than 3:1 and all reclaimed as a wildlife area. Any spoil outside quarry will be graded as placement is being accomplished.

REPLACEMENT OF TOPSOIL

SPOIL IN PIT - After all remaining spoil outside slopes have been graded, topsoil will be placed on spoil at least 1' in thickness.

CASE OF SPOIL-OUTSIDE PIT - The grading and topsoil will be replaced, one after the other stripping.

REVEGETATION

Outside Pit - After grading (Fall/Spring)

Inside Pit - After reserves have been depleted

AVERAGE DEPTH OF REPLACED TOPSOIL (INCHES)

12"

D. USE OF LAND WHEN RECLAIMED

Estimate acreage of each land use below, after reclamation	ESTIMATED ACRES:
Wildlife (forest or other habitat with livestock excluded)	214
Agricultural (pasture, cropland, and horticultural)	120
Development (residential, industrial, and recreational)	55
Water impoundments (for wildlife, agricultural, or development)	60
	TOTAL 449

PERMIT NO. SITE NO. +/or NAME

By my signature, I attest to the following:

1. All statements made on this Mine Plan Form are correct, complete, and true, to the best of my knowledge.

2. I or the company I am authorized to represent intend(s) to mine in accordance with this Mine Plan Form, and in accordance with the Missouri Land Reclamation Act, Sections 444.760 through 444.789, RSMo and all rules, regulations, orders, decisions and permits of the Missouri Land Reclamation Commission pertaining to my company's surface mining operations.

3. I have obtained the approval of all landowner's for all proposed post-reclamation land uses.

4. I have a valid agreement with all landowners which gives me the right to grant access to the Director of the Missouri Land Reclamation Commission and his authorized representatives, and I grant such access, and further where I have no such right, I have attached signed affidavits from the landowners, granting such access.

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SIGNATURE OF APPLICANT	TITLE	DATE
[signature]	GEOLOGIST	12-5-99

NOTARY PUBLIC EMBOSSER SEAL	STATE	COUNTY (OR CITY OF ST LOUIS)
	MISSOURI	RALLS
	SUBSCRIBED AND SWORN BEFORE ME THIS 6th DAY OF December 1999	USE RUBBER STAMP IN CLEAR AREA BELOW
	NOTARY PUBLIC SIGNATURE: Shirley A. Bode — MY COMMISSION EXPIRES: 8-15-2000	
	NOTARY PUBLIC NAME (TYPED OR PRINTED): SHIRLEY A. BODE	

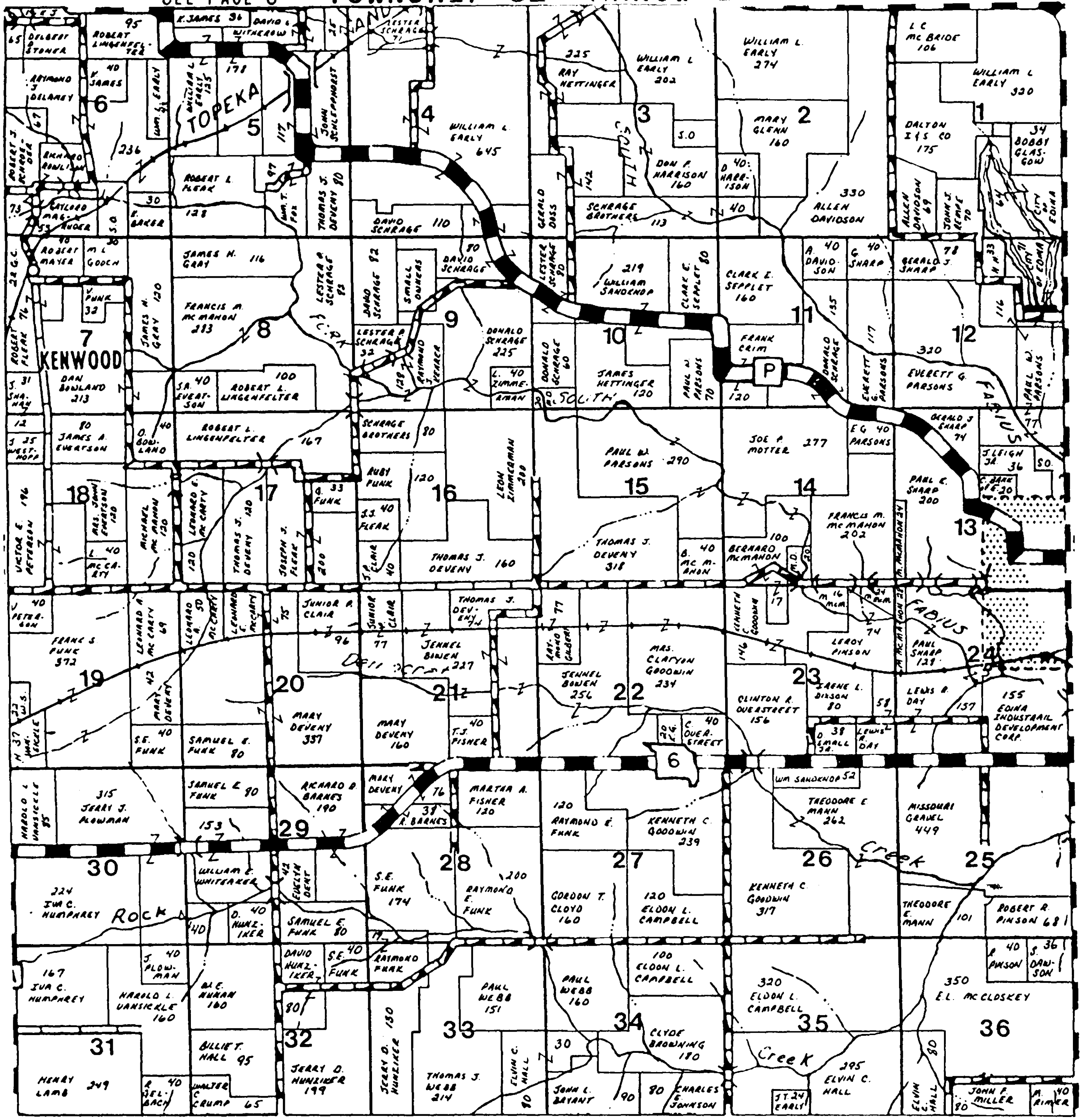
APPROVED BY (DIRECTOR'S REPRESENTATIVE)	DATE APPROVED	PERMIT NUMBER
[signature]	12-10-99	0038

MO 780-1327 (12-91)

PERMIT NO._____ SITE NO.+/or NAME_____

SEE PAGE 8

TOWNSHIP 62 RANGE 1



PLAT MAP SHOWING PROPERTY OWNED BY CENTRAL STONE COMPANY / KNOX COUNTY STONE COMPANY - EDINA - ALL GROUND IN LONG RANGE MINE PLAN

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11-17-98

482-131

KNOX COUNTY STONE COMPANY- LONG RANGE LAND USE MAP- 1999

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- ☐ WILDLIFE AREAS / FOREST - 214 AC.
- ☐ AGRICULTURAL (CROP/PASTURE) - 120 AC
- ☐ WATER IMPOUNDMENT - 60 AC.
- ■ INDUSTRIAL - 55 AC

449 TOTAL

1" = 924'

N

Marion Series

The Marion series consists of deep, poorly drained, nearly level soils on uplands. These soils formed in silty and clayey material. The native vegetation was deciduous trees.

In a representative profile the surface layer is dark grayish-brown silt loam about 3 inches thick. The subsurface layer is grayish-brown silt loam about 9 inches thick. The subsoil is about 48 inches thick. It is yellowish-brown and grayish-brown, very firm silty clay in the upper part and grayish-brown and light brownish-gray, firm silty clay loam in the lower part.

Marion soils have very slow permeability. Available water capacity is high. Organic-matter content and natural fertility are low. Wetness and a hazard of erosion are limitations.

Representative profile of Marion silt loam, 0 to 2 percent slopes, in a small wooded area, 255 feet west and 550 feet north of the southeast corner of NE¼ sec. , T. 62 N., R 10 W., in Knox County:

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) silt loam; moderate, fine, granular structure; friable; many fine roots; neutral; abrupt, smooth boundary.

A2—3 to 12 inches, grayish-brown (10YR 5/2) silt loam; moderate, medium, platy and moderate, fine, granular structure; friable; many fine roots; very strongly acid; abrupt, smooth boundary.

B21t—12 to 24 inches, yellowish-brown (10YR 5/4) silty clay; few, fine, faint, grayish-brown (10YR 5/2) mottles; moderate, fine, subangular blocky structure; very firm; few medium roots; thin continuous clay films; strongly acid; gradual, smooth boundary.

B22t—24 to 30 inches, grayish-brown (10YR 5/2) silty clay; common, fine, distinct, yellowish-brown (10YR 5/4) mottles; moderate, fine, subangular blocky structure; very firm; thin continuous clay films; strongly acid; clear, smooth boundary.

B31t—30 to 36 inches, grayish-brown (10YR 5/2) silty clay loam; common, fine, distinct, dark-brown (7.5YR 4/4) mottles; weak, fine, subangular blocky structure; firm; thin discontinuous clay films; strongly acid; gradual, smooth boundary.

B32—36 to 60 inches, light brownish-gray (10YR 6/2) light silty clay loam; common, fine, distinct, yellowish-brown (10YR 5/8) mottles; massive; firm; few black (10YR 2/1) concretions of oxides; strongly acid.

The A1 horizon is dark grayish brown, grayish brown, or very dark grayish brown and is 1 to 3 inches thick. The A2 horizon is grayish brown or light brownish gray and ranges from 6 to 10 inches in thickness. The B horizon is yellowish brown or grayish brown and has strong-brown or dark-brown mottles.

Marion soils formed in the same kind of material as Calwoods and Mexico soils. They lack red mottles, which are characteristic of Calwoods and Mexico soils. They have a thinner A1 horizon than Mexico soils.

MaB—Marion silt loam, 2 to 5 percent slopes. This soil is on the sides of high benches of streams. Slopes are generally short. This soil occurs in uniformly shaped areas about 3 to 15 acres in size. It has a profile similar to the one described as representative of the series, but the surface layer is generally a few inches thicker, the subsurface layer is a few inches thinner in places, and the upper part of the subsoil is brighter colored.

Included with this soil in mapping are small areas of Auxvasse soils. These areas make up about 10 percent of the mapped acreage.

Runoff is medium. Erosion is a severe hazard.

This soil is used for row crops where adjacent soils are used for row crops. Some areas are used for hay or permanent pasture. Capability unit IIIe–5.

Moniteau Series

The Moniteau series consists of deep, poorly drained, nearly level soils on bottom lands. These soils formed in silty material. The native vegetation was deciduous trees.

In a representative profile the surface layer is dark-gray silt loam about 9 inches thick. The subsurface layer is gray silt loam about 8 inches thick. The subsoil is dark-gray and dark grayish-brown, firm silty clay loam about 26 inches thick. The underlying material is dark-gray silt loam.

Moniteau soils have slow permeability. Available water capacity is high. Organic-matter content is moderate, and natural fertility is low.

These soils are suited to row crops. Because flooding is frequent, many areas are in permanent pasture. Wetness is the main limitation.

Representative profile of Moniteau silt loam, in a permanent pasture, 150 feet west and 530 feet south of the northeast corner of sec. 14, T. 59 N., R. 12 W., in Shelby County:

Mo—Moniteau silt loam. This level to nearly level soil is on low benches and in narrow valleys of streams. It is in irregularly shaped areas about 10 to 50 acres in size.

Included with this soil in mapping are areas of Piopolis and Arbela soils. These areas make up about 10 percent of the mapped acreage.

Runoff is slow. Wetness is a severe limitation because of flooding. Building levees to protect the soil from flooding is generally not practical, because areas are small.

Some areas of this soil are used for corn and soybeans, but other areas are used mainly for pasture because they are very irregular in shape and are subject to frequent flooding. Some areas are in woodland. Capability unit IIIw–2.

Gifford Series

The Gifford series consists of deep, somewhat poorly drained, gently sloping and moderately sloping soils on the sides of stream terraces. These soils formed in silty and clayey material overlying alluvial sediment. The native vegetation was tall prairie grasses.

In a representative profile the surface layer is very dark gray silt loam about 7 inches thick. The subsoil is about 49 inches thick. It is dark-gray, dark grayish-brown, and grayish-brown, very firm silty clay in the upper part; and grayish-brown and dark-gray, firm silty clay loam and clay loam in the lower part. The underlying material is yellowish-brown loamy sand.

Gifford soils have very slow permeability. Available water capacity is high. Organic-matter content is moderate, and natural fertility is medium. Erosion is a severe hazard.

These soils are used for crops commonly grown in the survey area.

Representative profile of Gifford silt loam, 2 to 5 percent slopes, in a cultivated field, 150 feet east and 100 feet south of the northwest corner of SW¼ sec. 13, T. 63 N., R. 11 W., in Knox County:

Ap—0 to 7 inches, very dark gray (10YR 3/1) silt loam; moderate, fine, granular structure; friable; many fine roots; medium acid; clear, smooth boundary.

B1t—7 to 9 inches, mottled, dark-gray (10YR 4/1) and dark grayish-brown (10YR 4/2) silty clay loam; weak, fine, subangular blocky structure; firm; few fine roots; thin discontinuous clay films; strongly acid; clear, smooth boundary.

B21t—9 to 23 inches, grayish-brown (2.5Y 5/2) silty clay; common, fine, distinct, strong-brown (7.5YR 5/6) and yellowish-brown (10YR 5/6) mottles; moderate, fine, subangular blocky structure; very firm; few fine roots; thin discontinuous clay films; medium acid; clear, smooth boundary.

B22t—23 to 30 inches, grayish-brown (2.5Y 5/2) silty clay; few, fine, distinct, strong-brown (7.5YR 5/6) and many, medium, distinct, reddish-brown (5YR 4/4) mottles; moderate, fine, subangular blocky structure; very firm; few medium roots; thin discontinuous clay films; black (10YR 2/1) oxide stains; slightly acid; clear, smooth boundary.

B31—30 to 38 inches, grayish-brown (2.5Y 5/2) silty clay loam; common, fine, distinct, strong-brown (7.5YR 5/8) and yellowish-red (5YR 4/6) mottles; moderate, fine, subangular blocky structure; firm; neutral; clear, smooth boundary.

B32—38 to 56 inches, dark-gray (10YR 4/1) clay loam; common, medium, distinct, dark-brown (7.5YR 4/4) mottles; weak, fine, subangular blocky structure and weak, thin, platy; firm; neutral; clear, smooth boundary.

IIC—56 to 68 inches, yellowish-brown (10YR 5/6) loamy sand; single grained; loose; neutral.

The Ap horizon is very dark gray or very dark grayish brown and is 7 to 9 inches thick. The B horizon is grayish-brown, dark-gray, or dark grayish-brown silty clay, silty clay loam, or clay loam.

Gifford soils formed in the same kind of material as Chariton and Auxvasse soils. They lack an A2 horizon, which is a prominent characteristic of Chariton and Auxvasse soils.

GfC—Gifford silt loam, 5 to 9 percent slopes. This soil occurs on the sides of high benches of streams. It is in uniformly shaped areas about 5 to 25 acres in size. It has a profile similar to the one described as representative of the series, but the surface layer is 2 to 3 inches thinner.

Included with this soil in mapping are areas of steeper Gifford soils. These areas make up about 5 percent of the mapped acreage. Also included are areas of soils that have a thinner, lighter colored surface layer.

Runoff is medium. Erosion is a severe hazard. If the slopes are long enough, constructing terraces helps to control erosion.

This soil is used for corn and soybeans. Capability unit IIIe–5.

Arbela Series

The Arbela series consists of deep, somewhat poorly drained, nearly level soils on low terraces of bottom lands. These soils formed in silty and clayey alluvial sediment. The native vegetation was tall prairie grasses.

In a representative profile the surface layer is very dark grayish-brown and very dark gray silt loam about 13 inches thick. The subsurface layer is dark-gray and gray silt loam about 10 inches thick. The subsoil is dark-gray and dark grayish-brown, firm silty clay loam about 52 inches thick.

Arbela soils have moderately slow permeability. Available water capacity is high. Organic-matter content is moderate, and natural fertility is high.

These soils are easily tilled. Crops respond well to lime and fertilizer.

Representative profile of Arbela silt loam, in a cultivated field, 650 feet east and 33 feet south of the northwest corner of NE¼ sec. 35, T. 63 N., R. 10 W., in Knox County:

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) silt loam; moderate, fine, granular structure; very friable; neutral; gradual, smooth boundary.

A12—7 to 13 inches, very dark gray (10YR 3/1) silt loam; moderate, fine, granular structure; very friable; neutral; abrupt, smooth boundary.

A21—13 to 17 inches, dark-gray (10YR 4/1) silt loam; few, fine, distinct, yellowish-brown (10YR 5/6) mottles; moderate, thin, platy structure; very friable; slightly acid; clear, smooth boundary.

A22—17 to 23 inches, gray (10YR 5/1) silt loam; few, fine, distinct, yellowish-brown (10YR 5/6) and dark-brown (10YR 3/3) mottles; weak, thin, platy structure; very friable; strongly acid; abrupt, smooth boundary.

B2tg—23 to 43 inches, dark-gray (10YR 4/1) and dark grayish-brown (10YR 4/2) heavy silty clay loam; common, fine, distinct, yellowish-brown (10YR 5/6) mottles; moderate, fine, subangular blocky structure; firm; thick continuous, very dark grayish-brown (10YR 3/2) clay films; strongly acid; gradual, smooth boundary.

B3tg—43 to 75 inches, dark grayish-brown (10YR 4/2) silty clay loam; common, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, fine, subangular blocky structure; firm; thin continuous clay films; few concretions of oxides; medium acid.

The Ap horizon is very dark gray or very dark grayish brown and ranges from 7 to 11 inches in thickness. The A2 horizon ranges from 8 to 12 inches in thickness. The B horizon is dark gray, dark grayish brown, or gray.

Arbela soils formed in the same kind of material as Blackoar and Piopolis soils. They have a finer textured B horizon than Blackoar soils. They have a thicker A horizon and are better drained than Piopolis soils.

Ar—Arbela silt loam. This level to nearly level soil is on low terraces of streams. It is in uniformly shaped areas about 20 to 60 acres in size.

Included with this soil in mapping are small areas of Piopolis and Blackoar soils. These areas make up about 10 percent of the mapped acreage.

Runoff is slow. Wetness is a moderate limitation.

This soil is used mainly for row crops commonly grown in the survey area. Capability unit IIw–1.

Mo. R+C

ROADWAY

3:1 FINAL SLOPE

PROPOSED AREA TO BE STRIPPED 15 AC.

QUARRY AREA UNDER BOND

29 AC. + 4 AC. = 33 AC. TOTAL

PROPOSED SPOIL AREA 3 AC.

SHOP

WORK AREA

Creek

Map Showing Proposed New Areas to be Affected
Under Long Range Mine Plan
Permit #0035, T62N, R12W, Knox County, MO

- Property Line / Long Range Mine Plan Area
- Quarry Area Under Bond – 29 Ac.
  29 Ac. + 4 Ac. Spoil area in Pit = 33 Ac
- Spoil Area Under Bond – 5 Ac.
- Proposed Area to be Stripped – 15 Ac.
- Proposed Area of Spoil Placement – 3 Ac.

Total Acres Under Bond:
38 (old) + 18 (new) = 56 Ac. Total

N

Map by Richard Klimstra

1" = 200'

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF MISSOURI
GEOLOGICAL SURVEY AND WATER RESOURCES
WILLIAM C. HAYES, STATE GEOLOGIST

EDINA QUADRANGLE
MISSOURI–KNOX CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1963. Field checked 1965

Polyconic projection. 1927 North American datum
10,000-foot grid based on Missouri coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks,
zone 15, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1965 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

Knox Co. Prop

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
AND BY THE MISSOURI GEOLOGICAL SURVEY, ROLLA, MISSOURI
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS AVAILABLE ON REQUEST

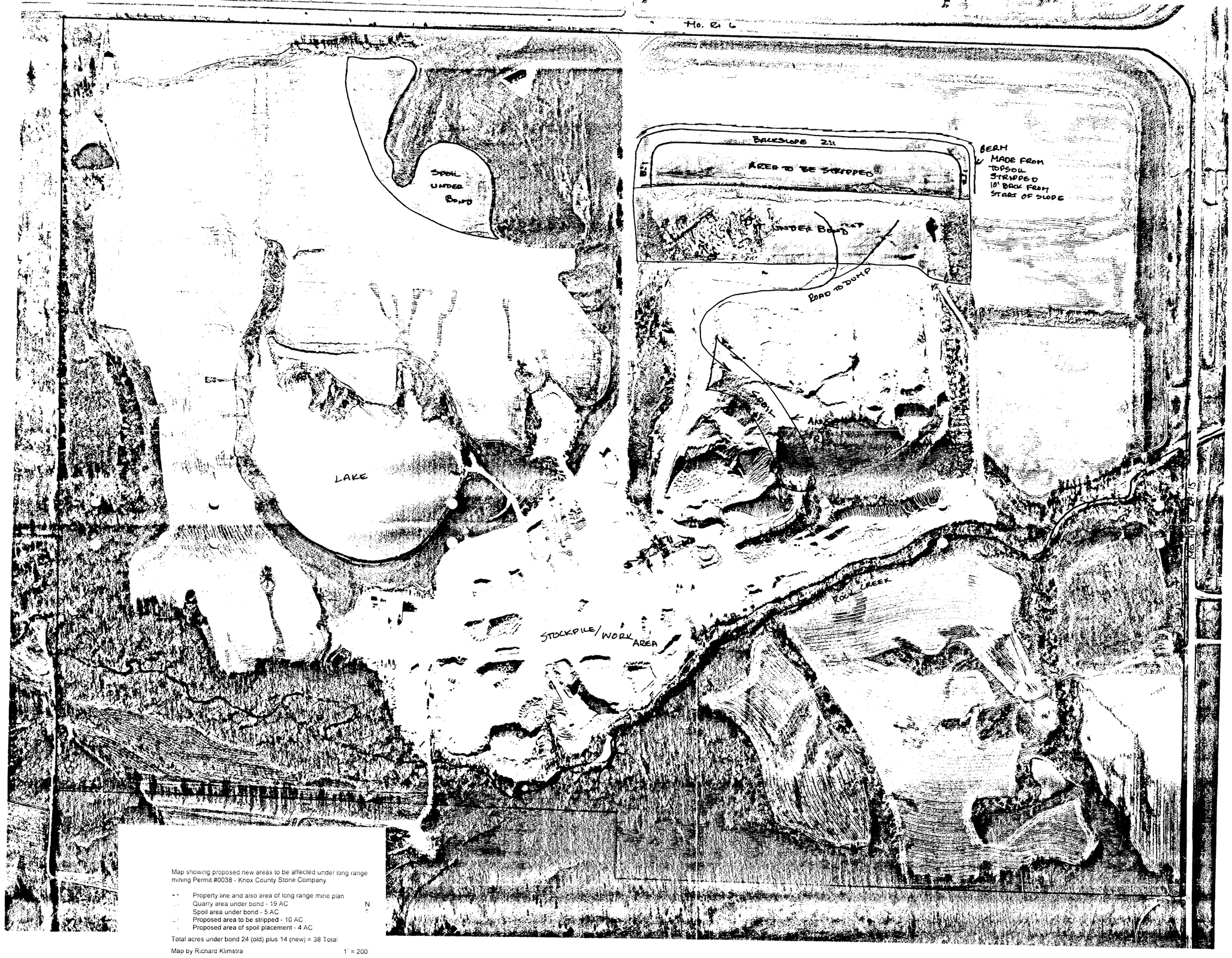
ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt
State Route

QUADRANGLE LOCATION

EDINA, MO.
N4007.5—W9207.5/7.5

1965

AMS 7564 II NW—SERIES V879



Map showing proposed new areas to be affected under long range mining Permit #0038 - Knox County Stone Company

- Property line and also area of long range mine plan
- Quarry area under bond - 19 AC
- Spoil area under bond - 5 AC
- Proposed area to be stripped - 10 AC
- Proposed area of spoil placement - 4 AC

N

Total acres under bond 24 (old) plus 14 (new) = 38 Total

Map by Richard Klimstra

1" = 200

Map Showing Proposed Affected Area Map - Knox County Stone Company - Edina, MO
Area Under Long Rand Mine Plan - Total Affected Area - 55 Acres

- Property Line
- Old Spoil Pre-Aug.28, 1990
- Spoil Area Post 1990 Under Bond 8 Ac.
- Quarry Area Post 1990 Under Bond 6 Ac.
- Proposed Area to be Stripped 10 Ac. Industrial
- Proposed Berm Spoil Area - 13 Ac.
- Proposed Spoil Area - Wildlife - 32 Ac.

N

SCALE 1" = 200'

NOTE: Stockpile Areas and Pit Areas unless otherwise noted are all Pre-Aug.28, 1990 and have been released from Bonds by DNR.

PERMIT - Nº 73-38 &
Nº 73-38 RENEWAL

AREA STRIPPED 56 ACRES

QUARRY

SPOIL USED FOR LEVEL 2,6 ACRES

AREA OF SPOIL - TO BE USED FOR STOCK PILE
AREA - LEVELED OFF
6.8 ACRES

LAND RECLAMATION COMMISSION
STATE OF MISSOURI

MAP SHOWING AFFECTED AREA
AT
KNOX COUNTY STONE CO.

EDINA; KNOX COUNTY SEC. 25, Twp. 62N, R12W

SCALE: 1" = 100'

N.